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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,226	11/14/2003	Myung Kwan Ryu	CU-3454 RJS	2538
26530	7590	05/03/2005	EXAMINER	
LADAS & PARRY LLP 224 SOUTH MICHIGAN AVENUE SUITE 1200 CHICAGO, IL 60604			NGUYEN, THANH T	
			ART UNIT	PAPER NUMBER
			2813	

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

- Ak

<b>Office Action Summary</b>	<b>Application No.</b> 10/714,226	<b>Applicant(s)</b> RYU ET AL.	
	<b>Examiner</b> Thanh T. Nguyen	<b>Art Unit</b> 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 5-10 is/are rejected.
- 7) ☒ Claim(s) 2-4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Priority***

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119

(a)-(d).

### ***Oath/Declaration***

Oath/Declaration filed on 11/14/03 has been considered.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato et al.

(U.S. Patent No. 5,304,357).

Referring to figures 4-9, Sato et al. teaches a method for fabricating single crystal silicon film comprises of: forming a single crystal region through a laser irradiation after forming a

Art Unit: 2813

semiconductor layer (2) or a metal thin film on a transparent or semi-transparent substrate (1) which comprises the steps of:

Forming a single crystal seed region on the substrate of the desired size by a crystallization method using laser irradiation (4/5, figures 4, 8-9, col. 6, lines 5-27, col. 4, lines 10-42);

Converting the desired region of the semiconductor layer or metal thin film into a single crystal region, using the single crystal seed region (figures 4-5, col. 2, lines 24-67).

Regarding to claim 5, the single crystal region is formed over the entire substrate, or a portion where a semiconductor device (diode or TFT) is formed or a portion where a circuit region of the semiconductor device is formed (see col. 13, lines 4-67).

Regarding to claim 6, the transparent substrate (1) includes glass, plastic and insulating film (see col. 11, lines 65-68, col. 7, lines 24-63).

Regarding to claim 7, the insulating film (3) is a Si nitride or oxide film selected from SiO<sub>x</sub>, SiO<sub>x</sub>H<sub>y</sub>, SiN<sub>x</sub>, and their bilayer or multiple layer, or a film of nitride or oxide of a metal selected from Al, Cu, Ti and W (col. 7, lines 24-63).

Regarding to claim 8, the semiconductor layer is made of one selected from a-Si, a-Ge, a-SixGe<sub>y</sub>, poly-Si, poly-Ge, and poly-SixGe<sub>x</sub> (see col. 7, lines 64-67).

Regarding to claim 9, the metal thin film is made of a metal selected from Al, Cu, Ti, W, Au and Ag, or a compound of the metal and a semiconductor (see col. 3, lines 10-20).

Regarding to claim 10, the laser is an excimer laser (col. 8, lines 46-50).

Art Unit: 2813

Claims 1, 6-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Moon (U.S. Patent No. 6,113,689).

Referring to figures 1a-1g, Moon teaches a method for fabricating single crystal silicon film comprises of: forming a single crystal region through a laser irradiation after forming a semiconductor layer (10) or a metal thin film on a transparent or semi-transparent substrate (100) which comprises the steps of:

Forming a single crystal seed region (10m) on the substrate (10) of the desired size by a crystallization method using laser irradiation (50, figures 1, col. 2, lines 12-37);

Converting the desired region of the semiconductor layer or metal thin film into a single crystal region, using the single crystal seed region (10m, figures 1f-1g, col. 2, lines 44-67).

Regarding to claim 6, the transparent substrate (1) includes glass, plastic and insulating film (100, see col. 1, lines 58-67).

Regarding to claim 7, the insulating film (3) is a Si nitride or oxide film selected from SiO<sub>x</sub>, SiO<sub>x</sub>H<sub>y</sub>, SiN<sub>x</sub>, and their bilayer or multiple layer, or a film of nitride or oxide of a metal selected from Al, Cu, Ti and W (see col. 1, lines 58-67).

Regarding to claim 8, the semiconductor layer is made of one selected from a-Si, a-Ge, a-SixGey, poly-Si, poly-Ge, and poly-SixGex (see col. 1, lines 58-67).

Regarding to claim 9, the metal thin film is made of a metal selected from Al, Cu, Ti, W, Au and Ag, or a compound of the metal and a semiconductor (see col. 1, lines 58-67).

*Allowable Subject Matter*

Claims 2-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the prior art teaches or suggests the subset of teach irradiating the substrate of the desired size with a laser in a specific shape through a mask so that the laser-irradiated portion is firstly crystallized, conducting a first scanning process which comprises moving the laser by the desired distance so that a grain in the firstly crystallized portion is grown by the desired distance, completing the first scanning process after it was progressed by the desired distance, thereby forming a poly-crystal island region, conducting a second scanning process which comprises 90o turning the laser at the end of the first scanning process and scanning the seed grain formed in an elongated shape in the scanning direction during the first scanning process so that the see grain is grow to form a single crystal region, irradiating the laser onto a portion of a single crystal seed region formed after progressing the second scanning process by the desired distance, thereby extending the single crystal region.

*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Nguyen whose telephone number is (571) 272-1695, or by Email via address Thanh.Nguyen@uspto.gov. The examiner can normally be reached on Monday-Thursday from 6:00AM to 3:30PM.

Art Unit: 2813

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, can be reached on (571) 272-1702. The fax phone number for this Group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956 (See **MPEP 203.08**).

A handwritten signature in black ink, appearing to read 'Thanh', with a large, sweeping initial 'T'.

Thanh Nguyen  
Patent Examiner  
Patent Examining Group 2800

TTN